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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/758,647
Filing Date: January 10, 2001
Appellant(s): PENG ET AL.

MAILED
APR 0 6 2006
Technology Center 2600

Joseph Lutz
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 22, 2004 appealing from the Office action mailed August 2, 2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is substantially correct. The minor errors are as follows: Since only claims involved in the appeal should be listed in the Claims Appendix, withdrawn claims 25 and 26 as shown at pages 23-24 of the Brief filed December 22, 2004 should therefore not be listed.

(8) Evidence Relied Upon

The appellants have failed to provide an Evidence Appendix section in the Brief filed December 22, 2004, as required by 37 CFR 41.37(c). But it is clear from the record that there is no evidence submitted and therefore it is assumed that the appellants meant to include a statement of "NONE".

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno et al of record (5,436,665) in view of Li of record (US 2002/0080878 A1).

Ueno et al discloses a motion picture coding apparatus as shown in Figures 1, 4, and 5, and substantially the same article comprising a computer-readable medium which stores computer-executable instructions, method, and system as claimed in claims 1-24, comprising substantially the same first unit (102, 29, 103, 30-33, 35 of Figure 1) to generate a first body of data being sufficient to permit generation of a viewable video sequence of lesser quality than is represented by a source video sequence; a second unit (100, 101, 12, 17-24, 27, 104 of Figure 1) to generate a second body of data being sufficient to enhance the quality of the viewable video sequence generated from the first body of data (see column 7, line 42 to column 8, line 38), the

second body of data being generated by subtracting a reconstructed body of data (i.e., output of 104 of Figure 1) from a subsection of the source video sequence (i.e., output of 101 of Figure 1), wherein the reconstructed body of data is selected from a group of at least two separate reconstructed bodies of data (see Figure 5 and column 10, line 51 to column 11, line 40), wherein the group of at least two separate bodies of data is selected from a reconstructed first body of data (i.e., 132 of Figure 5) sufficient to permit generation of the viewable video sequence of lesser quality than is represented by the source video sequence, a reconstructed second body of data (i.e., 134 of Figure 5) sufficient to enhance the quality of the viewable video sequence generated from the first body of data, or a combination (i.e., 132-133, 140 of Figure 5, and see column 11, lines 30-40) of the reconstructed first and second bodies of data; the second body of data is generated by subtracting a reconstructed body of data (i.e., output from 104 of Figure 1) from a macroblock of the source video sequence (i.e., output of 101 of Figure 1, and see column 9, lines 38-53); wherein the second unit compares the at least two separate reconstructed bodies of data to the source video sequence to adaptively selected from the reconstructed first body of data, the reconstructed second body of data, or the combination of the reconstructed first and second bodies of data, wherein the selection of the reconstructed body of data is indicated in a syntax of a bit-stream transmitted from the system (see column 9, lines 38-53, column 10, line 51 to column 11, line 40); wherein a first set of motion vectors are used by the first unit to generate the first body of data and the first set of motion vectors are used by the second unit to generate the second body of data (see Figure 5); and the first unit and the second unit are included on a single hardware component (see Figure 1).

Ueno et al does not particularly disclose, though, the followings:

(a) wherein the second body of data includes an enhancement layer that captures differences between the viewable video sequence and the source video sequence, and a third unit to predict a subsection of the enhancement layer according to a prediction mode of a plurality of prediction modes, the plurality of prediction modes including prediction using the source video sequence and a combination of a previous enhancement frame and the first body of data as claimed in claims 1, 9, and 17; and

(b) prior to generating the second body of data generated by subtracting the reconstructed body of data from the subsection of the source video sequence, spatially reconstruct and clip the reconstructed first body of data, and spatially reconstruct and clip the reconstructed second body of data as claimed in claims 3, 11, and 19.

Regarding (a), it is noted that Ueno et al does teach that the second body includes a high resolution signal (see column 8, line 59 to column 9, line 8) that captures differences between the viewable video sequence and the source video sequence (i.e., differences between the (a) low resolution picture, high resolution picture, and intra-frame prediction picture derived from the predictor and prediction mode decision unit 104, and (b) the input signal are compared to select a prediction mode, with the low resolution picture representing the viewable video sequence and the input signal representing the source video sequence as claimed, see column 8, line 59 to column 9, line 8). But Ueno et al does not particularly teach that the second body includes one or more enhancement layers as claimed. It is however considered obvious that the high resolution signal generated by the second body of Ueno et al is equivalent to the one or more enhancement layers as claimed. In any event, Li discloses a video apparatus and method for

digital video enhancement as shown in Figure 1, and teaches the conventional enhancement layer generations and that high resolution images are achieved through the enhancement layer coding (see enhancement layer of Figure 1, page 1, section [0008], page 2, section [0012]). In view of such teachings of Li, it is hence considered obvious that the second unit (100, 101, 12, 17-24, 27, 104 of Figure 1) of Ueno et al that generates a second body of data being sufficient to enhance the quality of the viewable video sequence generated from the first body of data provides the same enhancement layer coding as claimed. Thus, the prediction unit 104 of Ueno et al thereby provides the same predicting a subsection of the enhancement layer according to a prediction mode (i.e., as provided by 135 of Figure 5 of Ueno et al) of a plurality of prediction modes, the plurality of prediction modes including prediction using the source video (i.e., as provided by 10, 100, 101 of Figure 1 of Ueno et al) and a combination of a previous enhancement frame (i.e., as provided by 27 of Figure 1 of Ueno et al) and the first body of data (i.e., as provided by 102, 29, 103, 30-33, 35 of Figure 1 of Ueno et al and see column 9, lines 38-53, column 10, line 51 to column 11, line 40), as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Ueno et al and Li references in front of him/her and the general knowledge of base and enhancement layer codings within MPEG video coders, would have had no difficulty in providing the enhancement layer coding as taught by Li for the system as shown in Figure 1 of Ueno et al if the high resolution signal of Ueno et al provided by elements 100, 101, 12, 17-24, 27, 104 of Figure 1 of Ueno et al is not already equivalent to the enhancement layer and so that the predictor 104 of Ueno et al predicts a subsection of the enhancement layer for the same well known motion video compensation and different layer coding purposes for providing different quality of images as claimed.

Regarding (b), Li teaches the conventional clipping of reconstructed bodies of data (see 135 of Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art, having the Ueno et al and Li references in front of him/her and the general knowledge of video compression processings, would have had no difficulty in providing the clipping function as taught by Li for the first and second body of data within Figure 1 of Ueno et al for the same well known adjustment of the video to prevent invalid video data purposes as claimed.

(10) Response to Argument

Regarding the appellants' arguments at pages 4-5 of the Brief filed December 22, 2004 concerning in general that the prediction signal generated by Ueno is never stored and therefore cannot be used in combination with the base layer to predict an enhancement layer and that Ueno is devoid of any teachings regarding a base layer and a combination of the base layer with one or more enhancement layers to provide fine granularity scaling or FGS, the Examiner wants to point out that: The Specification is not the measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. In re Sporck, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968).

Regarding the appellants' arguments at pages 5-6 of the Brief filed December 22, 2004 concerning in general that Li includes a motion estimation circuit 145 that finds the motion vector of a macroblock and the current frame relative to the previous frame and it is evident that Li fails to mention any prediction with regards to the identified region of interest, the Examiner respectfully disagrees. It is submitted again that it is considered obvious to provide the enhancement layer coding system of Li for the system as shown in Figure 1 of Ueno et al so that the predictor 104 of Ueno et al predicts a subsection of the enhancement layer.

Regarding the appellants' arguments at pages 6-8 of the Brief filed December 22, 2004 concerning in general that "... as illustrated by the cited passages of Ueno, the high resolution signal referred to by the Examiner does not capture differences between the viewable video sequence and the source video sequence ... Ueno fails to teach that the second body of data includes a high resolution signal that captures differences between the viewable video sequence and the source video sequence, as contended by the Examiner ...", the Examiner respectfully disagrees. Ueno at column 8, line 59 to column 9, line 8 clearly teaches the calculation of differences between the (a) low resolution picture, high resolution picture, and intra-frame prediction picture derived from the predictor and prediction mode decision unit 104, and (b) the input picture to select a prediction mode. The low resolution picture for example is representative of the viewable video sequence and the input picture signal is representative of the source video sequence, and therefore the high resolution picture signal as derived from the second unit (i.e., elements 100, 101, 12, 17-24, 27, 104 of Ueno) is based on the difference between the viewable video sequence and the source video sequence.

Regarding the appellants' arguments at pages 8-9 of the Brief filed December 22, 2004 concerning in general that "... Assuming, arguendo, that the high resolution signal (prediction signal) generated by the second body of Ueno is equivalent to one or more enhancement layers, as illustrated in FIG. 26 of Ueno, the prediction signal generated by predictor 204 is combined with the signal received from inverse DCT 233 to generate a high resolution picture ... the prediction signal generated by Ueno is never stored. Accordingly, assuming this prediction signal of Ueno is an enhancement layer, as suggested by the Examiner, without storage of this enhancement layer, the enhancement layer cannot be used to predict a subsequent enhancement

layer, as recited by Claims 1 and 9 ...", the Examiner respectfully disagrees. The high resolution picture at the output from adder 24 of Ueno, which represents the combination of the prediction signal output from predictor 104 and IDCT signal from inverse DCT 23, is being stored in frame memory 27 as the previous high resolution picture. The predictor 104 of Ueno therefore uses the previous high resolution picture stored in frame memory 27 as part of the motion estimation predictions, as described at column 8, lines 11-27, and column 8, line 59 to column 9, line 29 of Ueno. Since the high resolution signal generated by Ueno is equivalent to one or more enhancement layers, or considered obvious in view of Li, it is submitted that the combined Ueno and Li therefore renders obvious the particular predicting a subsection of the enhancement layer according to a prediction mode of a plurality of prediction modes, the prediction modes including prediction using the source video sequence and a combination of a previous enhancement frame and the first body of data, as claimed. It is to be further noted that applicant's Figure 6 also provides a frame buffer 1 for storing a previous enhancement frames generated from the combination of the prediction signal 684 and IDCT signal, to be used for motion estimation prediction.

Regarding the appellants' arguments at pages 9-10 of the Brief filed December 22, 2004 concerning in general that "... Ueno is completely devoid of and fails to teach or suggest a base layer and one or more enhancement layers to provide, for example, fine granularity scaling. Instead, Ueno is direct to, and lists as a primary object of the invention, improving the coding efficient ... the teachings of Li are directed to identifying a portion of interest in a video region and enhancing the quality of the region of interest by providing addition bits for coding said region ... one skilled in the art would not have a motivation for the combination or modification

of Ueno in view of Li due to the lack of any relationship between the use of a low resolution decoded signal in the predictive coding of a high resolution picture, as taught by Ueno, and enhancement layer coding as taught by Li ... ", the appellants are reminded again that: The Specification is not the measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. In re Sporck, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968). The particular base layer coding and fine granularity scaling as argued by the appellants are not even claimed. And regarding the enhancement layers, it is the Examiner's position again that the high resolution signal generated by the second body of Ueno is equivalent to the one or more enhancement layers as claimed, or for that matter considered obvious in view of the enhancement layer coding as taught by Li. Though the teachings of Ueno and Li may be directed to addition features, the critical issue at hand is that Ueno and Li nevertheless renders obvious the claimed invention since it is considered obvious to provide the enhancement layer coding system of Li for the system as shown in Figure 1 of Ueno et al so that the predictor 104 of Ueno et al predicts a subsection of the enhancement layer. Specifically again, the combined Ueno and Li therefore renders obvious the particular predicting a subsection of the enhancement layer according to a prediction mode of a plurality of prediction modes, the prediction modes including prediction using the source video sequence and a combination of a previous enhancement frame and the first body of data, as claimed.

Regarding the appellants' arguments at pages 10-11 of the Brief filed December 22, 2004 concerning in general that "... even if Ueno could be modified to teach that the second body of data including an enhancement layer according to Li, such modification would fail to teach the prediction of a subsection of the enhancement layer using the source video sequence in a

combination with a previous enhancement frame and the first body of data, since neither Li nor Ueno provides nay teachings with regards to storing of an enhancement layer to predict a subsequent enhancement layer ...", the Examiner wants to point out that such arguments have been addressed in the above.

Regarding the appellants' arguments at page 11 of the Brief filed December 22, 2004 concerning in general that "... as is clearly illustrated by FIGS 1-5 of Ueno, the prediction signal is not based on differences between a reconstructed signal and the input picture signal, but is in fact formed by selecting a prediction candidate that yields the smallest difference when subtracted from the input picture signal to provide the prediction error ...", the Examiner wants to point out again that the second body of Ueno as provided by elements 100, 101, 12, 17-24, 27, 104 of Figure 1 is nevertheless generated by subtracting a reconstructed body of data (i.e., output of 104 of Figure 1) from a subsection of the source video sequence (i.e., output of 101 of Figure 1), as claimed.

Regarding the appellants' arguments at pages 12-13 of the Brief filed December 22, 2004 concerning in general that "... Ueno in view of Li fails to teach that the prediction signal generated by unit 104 provides the same enhancement layer coding as claimed ... Ueno is completely devoid of and fails to teach or suggest a base layer and one or more enhancement layers to provide, for example, fine granularity scaling ... one skilled in the art would not have a motivation for the combination or modification of Ueno in view of Li due to the lack of any relationship between the use of a low resolution decoded signal in the predictive coding of a high resolution picture, as taught by Ueno, and enhancement layer coding as taught by Li ...", the

Examiner respectfully disagrees and wants to point out that such arguments have been addressed in the above.

Regarding the appellants' arguments at pages 13-15 of the Brief filed December 22, 2004 concerning in general that "... as clearly illustrated by FIGS. 1 and 26 of Ueno, the high resolution picture provided by output 21 is not divided into even and odd fields, as such division is only performed to generate the predictive signal, as illustrated with reference to FIGS. 4 and 5 of Ueno ... Ueno in view of Li would fail to teach or suggest the selection of the reconstructed body of data as indicated in syntax of a bit stream transmitted from an encoder, as recited by the claimed invention ... the separation of an input picture into even and odd fields, as taught by Ueno, to generate a predictive signal is not part of a final high resolution picture generated by the teachings of Ueno ...", the Examiner respectfully disagrees. As referenced by the appellants on page 14 of the Brief, there are three candidates available for selection by the predictor 104 within Ueno. The candidates include a low resolution predictive signal and two high resolution predictive signal, with the low and high resolution signals being based on odd and even line separations (see column 9, lines 9-53). And if one of the high resolution predictive signals is selected by predictor 104, for example, the second body of Ueno will process this high resolution signal thereby creating a high resolution picture or enhancement frame in view of the teachings of Li. Though Ueno may break down the frame into odd and even fields for motion predictions, and essentially a more complex system over the present invention, the critical issue at hand is that the combination of Ueno and Li nevertheless provides substantially the same if not the same prediction of a subsection of the enhancement layer according to a prediction mode of a plurality of prediction modes, the prediction modes including prediction using the source video sequence

and a combination of a previous enhancement frame and the first body of data, as claimed. And regarding the selection of the reconstructed body as indicated in syntax of a bitstream transmitted from an encoder, such features are considered inherent in the MPEG system as disclosed within Ueno (see column 9, lines 38-53).

Regarding the appellants' arguments at pages 15-18 of the Brief filed December 22, 2004 pertaining to the rejection of claims 7, 15, and 23, and in general that "... although low resolution prediction selection circuit uses a motion vector from high resolution prediction selection circuit 131, this motion vector is completely distinct from the motion vector generated by high resolution prediction circuitry 134. As specifically described by Ueno, the high resolution predictive signal generated by high resolution predictive circuit 134 corresponds to prediction that is currently under consideration in MPEG 2 and includes the detection of forward and backward motion vectors ... the motion vector generated by high resolution prediction circuit 134 is completely distinct from the motion vector generated by high resolution prediction selection circuit 131 since the motion vector generated by block 134 is based on prediction under consideration in MPEG 2 ... Ueno in view of Li would fail to teach or suggest a first set of motion vectors used to generate the first body of data and the first set of motion vectors are used to generate the second body of data ... the separation of an input picture into even and odd fields, as taught by Ueno, to generate the signal produced by block 132 (reconstructed first body of data) of Ueno is completely distinct from the motion vector used to generate the signal produced by block 134 (reconstructed second body of data), as taught by Ueno ...", the appellants' attention is directed to column 9, line 57 to column 10, line 22 of Ueno wherein it is taught that a motion vector generated by prediction selector 132 corresponding to the optimal predictive

signal is sent to prediction mode decision unit 135, and prediction mode decision unit 135 will select a motion vector which minimizes the prediction error from among all the received motion vectors generated by circuits 131, 132, and 134. The Examiner recognizes that the motion vectors generated by circuits 131, 132, and 134 of Ueno are distinct from each other, as explained by the appellants, but it is nevertheless that the motion vector generated by prediction selector 132 represents the first set of motion vectors. And since the prediction mode decision unit 135 may select the motion vector (first set of motion vectors) generated by prediction selector 132 to generate the second body of data, Ueno et al therefore reads on the claimed features of wherein the first set of motion vectors are used to generate the first body of data and the first set of motion vectors are used to generate the second body of data, as claimed.

(11) Related Proceeding(s) Appendix

The appellants have failed to provide a Related Proceeding(s) Appendix section in the Brief filed December 22, 2004, as required by 37 CFR 41.37(c). But it is clear from the record that there is no decision rendered by a court or the Board in any proceeding, and therefore it is assumed that the appellant meant to include a statement of "NONE".

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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